Rec'd PCT/PTO 02 MAY 2001

Form PTO-1390 (Rev. 12-29-99) US DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NO.
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371	H 3630 PCT/US
	U.S. APPLICATION NO. (if known, see 37 CFR 1.5) 09/830918

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP99/08105	**October 27, 1999**	**November 4, 1998**

TITLE OF INVENTION

ETHANOLIC COSMETIC PREPARATIONS CONTAINING CHITOSAN

APPLICANT(S) FOR DO/EO/US

Claudia Panzer, Holger Tesmann, Rolf Wachter

Applicant herewith submits to the United States Designated/Elected Office (EO/DO/US) the following items and other information:

1. ■ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39 (1).
4. ■ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ■ A copy of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ■ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ■ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ■ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ■ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ■ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). **(UNEXECUTED)**
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ■ A FIRST preliminary amendment
    ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☐ Other items or information:

"Express Mail Post Office to Addressee" service Mailing Label Number EL541613386US .

JC18 Rec'd PCT/PTO 02 MAY 2001

U.S. Application No. (if known, see 37 CFR 1.5) 09783091 8	INTERNATIONAL APPLICATION NO. PCT/EP99/08105	ATTORNEY'S DOCKET NUMBER H 3630 PCT/US

17.■ The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):

Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO.....**$1,000.00**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO.....**$860.00**

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37CFR 1.445(a)(2)) paid to USPTO **$710.00**

International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) **$690.00**

International preliminary examination fee paid to USPTO (37CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4).....**$100.00**

	CALCULATIONS	PTO USE ONLY
ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 860	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date 37 (CFR 1.492(e)).	$ 0	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total Claims	20 - 20 =	0	0 X $18.00	$ 0	
Independent Claims	2 - 3 =	0	0 X $80.00	$ 0	
Multiple dependent claims (s)(if applicable)		0	+ $270.00	$ 0	
TOTAL OF ABOVE CALCULATIONS =				$ 860	
Reduction of ½ for filing by small entity, if applicable. A Small Entity Statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				$ 0	
SUBTOTAL =				$ 860	
Processing fee of **$130.00** for furnishing the English translation later the ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +				$ 0	
TOTAL NATIONAL FEE =				$ 860	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property +				$ 0	
TOTAL FEES ENCLOSED =				$ 860	
				Amount to be: refunded:	$----------
				charged:	$ 860.00

a. ☐ A check in the amount of $_____ to cover the above fees is enclosed.

b. ■ Please charge my Deposit Account No. 50-1177 in the amount of $860.00 to cover the above fees. A triplicate copy of this sheet is enclosed. Order No. 01-0264 .

c. ■ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-1177 . A triplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO: Cognis Corporation, Law Dept.
2500 Renaissance Blvd., Suite 200
Gulph Mills, PA 19406

SIGNATURE:

Aaron R. Ettelman
NAME ATTORNEY FOR APPLICANT

42,516
REGISTRATION NUMBER

09/830918
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"Express Mail " Mailing Label Number EL541613386US .

PATENT
Docket No. H 3630 PCT/US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

RE: PCT/EP99/08105
International Filing Date: October 27, 1999
Priority Date Claimed: November 4, 1998
Applicant: Panzer et al.
Title: ETHANOLIC COSMETIC PREPARATIONS CONTAINING CHITOSAN
Applicants' Reference: H 3630 PCT/US

PRELIMINARY AMENDMENT

Commissioner for Patents
Box PCT
Washington, DC 20231

ATTN: DO/EO/US

Prior to the calculation of fees and examination of the above-identified national stage application pursuant to the accompanying submission under 35 U.S.C. §371, please amend the English translation of the International Application submitted herewith, without prejudice, as follows:

In the Specification:

Please amend the instant Specification, without prejudice, as follows:

Please delete all text above line 7 of page 1, including the heading "Prior Art", and replace the deleted matter with the following new section headings and title of the invention:

--TITLE OF THE INVENTION

Alcohol-Compatible Chitosan Salts and

Cosmetic Preparations Containing the Same

BACKGROUND OF THE INVENTION--

Preliminary Amendment of U.S. National Stage for International Application PCT/EP99/08105 filed October 27, 1999

At page 1, line 24 thereof, please delete the section heading "Description of the Invention" and insert the following new section heading and new paragraph:

--BRIEF SUMMARY OF THE INVENTION

The present invention relates, in general, to cosmetic preparations, and more particularly, to formulations which have high ethanol content and which contain special chitosan salts.--

At page 2, line 20 thereof, please insert the following new section heading:

--DETAILED DESCRIPTION OF THE INVENTION--

At page 14, between lines 1 and 2, please add the following new paragraph:

--What is claimed is:--.

On a separate, new page 15, following page 14, please add the following new section heading and paragraph containing an Abstract of the Disclosure:

--ABSTRACT OF THE DISCLOSURE

Cosmetic preparations containing large amounts of ethanol, for example, from 70 to 90% by weight, and from 0.01 to 5% by weight of a neutralization product of a chitosan and an acid selected from lactic acid, pyrrolidone carboxylic acid, nicotinic acid, hydroxyisobutyric acid, hydroxyisovaleric acid and/or mixtures thereof; are disclosed.--

In the Claims:

Please add new claims 8-27, as follows:

--8. (New) A cosmetic preparation comprising:

(a) ethanol in an amount of from 70 to 90% by weight; and

(b) a neutralization product of a chitosan and an acid selected from the group consisting of lactic acid, pyrrolidone carboxylic acid, nicotinic acid, hydroxyisobutyric acid, hydroxyisovaleric acid and mixtures thereof, wherein the

neutralization product is present in an amount of from 0.01 to 5% by weight.--

--9. (New) The cosmetic preparation according to claim 8, wherein the acid is selected from the group consisting of pyrrolidone carboxylic acid, nicotinic acid, hydroxyisobutyric acid, hydroxyisovaleric acid and mixtures thereof.--

--10. (New) The cosmetic preparation according to claim 8, wherein the acid is selected from the group consisting of hydroxyisobutyric acid, hydroxyisovaleric acid and mixtures thereof.--

--11. (New) The cosmetic preparation according to claim 8, wherein the chitosan comprises a partially deacetylated chitin having a degree of deacetylation of from 80 to 88%, an ash content of less than 0.3%, a Brookfield viscosity of less than 5000 mPas, and an average molecular weight within a range selected from the group consisting of 10,000 to 1,000,000 daltons and 100,000 to 5,000,000 daltons.--

--12. (New) The cosmetic preparation according to claim 11, wherein the chitosan has an average molecular weight of from 10,000 to 1,000,000 daltons.--

--13. (New) The cosmetic preparation according to claim 11, wherein the chitosan has an average molecular weight of from 100,000 to 5,000,000 daltons.--

--14. (New) The cosmetic preparation according to claim 9, wherein the chitosan comprises a partially deacetylated chitin having a degree of deacetylation of from 80 to 88%, an ash content of less than 0.3%, a Brookfield viscosity of less than 5000 mPas, and an average molecular weight within a range selected from the group consisting of 10,000 to 1,000,000 daltons and 100,000 to 5,000,000 daltons.--

--15. (New) The cosmetic preparation according to claim 14, wherein the

chitosan has an average molecular weight of from 10,000 to 1,000,000 daltons.--

--16. (New) The cosmetic preparation according to claim 14, wherein the chitosan has an average molecular weight of from 100,000 to 5,000,000 daltons.--

--17. (New) The cosmetic preparation according to claim 8, wherein the neutralization product comprises from 1 to 10% by weight of the chitosan in the acid, based upon the weight of the neutralization product.--

--18. (New) The cosmetic preparation according to claim 9, wherein the neutralization product comprises from 1 to 10% by weight of the chitosan in the acid, based upon the weight of the neutralization product.--

--19. (New) The cosmetic preparation according to claim 11, wherein the neutralization product comprises from 1 to 10% by weight of the chitosan in the acid, based upon the weight of the neutralization product.--

--20. (New) The cosmetic preparation according to claim 14, wherein the neutralization product comprises from 1 to 10% by weight of the chitosan in the acid, based upon the weight of the neutralization product.--

--21. (New) The cosmetic preparation according to claim 8, wherein the neutralization product comprises from 2 to 5% by weight of the chitosan in the acid, based upon the weight of the neutralization product.--

--22. (New) The cosmetic preparation according to claim 8, wherein the preparation and at least one propellant gas are contained within a spraying device.--

--23. (New) The cosmetic preparation according to claim 22, wherein the

ratio by weight of the cosmetic preparation to the at least one propellant gas is from 35:65 to 45:55.--

--24. (New) The cosmetic preparation according to claim 10, wherein the preparation and at least one propellant gas are contained within a spraying device.--

--25. (New) The cosmetic preparation according to claim 24, wherein the ratio by weight of the cosmetic preparation to the at least one propellant gas is from 35:65 to 45:55.--

--26. (New) A cosmetic preparation comprising:

(a) ethanol in an amount of from 70 to 90% by weight; and

(b) a neutralization product of a chitosan and an acid selected from the group consisting of nicotinic acid, hydroxyisobutyric acid, hydroxyisovaleric acid and mixtures thereof, wherein the neutralization product comprises from 2 to 5% by weight of the chitosan in the acid, based upon the weight of the neutralization product, wherein the neutralization product is present in the preparation in an amount of from 0.01 to 5% by weight, based upon the weight of the preparation, and wherein the chitosan comprises a partially deacetylated chitin having a degree of deacetylation of from 80 to 88%, an ash content of less than 0.3%, a Brookfield viscosity of less than 5000 mPas, and an average molecular weight within a range selected from the group consisting of 10,000 to 1,000,000 daltons and 100,000 to 5,000,000 daltons..--

--27. (New) The cosmetic preparation according to claim 26, wherein the preparation and at least one propellant gas are contained within a spraying device, and wherein the ratio by weight of the cosmetic preparation to the at least one propellant gas is from 35:65 to 45:55.--

Please cancel claims 1-7, without prejudice.

REMARKS

Claims 8-27 are currently pending in the instant application.

The Specification has been amended to delete the original section headings and to insert the preferred section headings pursuant to 37 C.F.R. §1.77. A new Title of the Invention has been inserted. An Abstract of the Disclosure, in accordance with the disclosure, has been added. It is submitted that the amendments to the Specification made herein introduce no new matter. All of the amendments to the Specification constitute deletions of original section headings and/or paragraphs, and insertions or additions of new section headings and/or paragraphs. Accordingly, pursuant to 37 C.F.R. §1.121(b)(1)(iii), no separate page captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE" is necessary. A separate page containing a clean copy of the Abstract of the Disclosure has been added for the Examiner's convenience. Entry of the amendments to the Specification made herein are therefore proper and respectfully requested.

Original claims 1-7 have been canceled and replaced with new claims 8-27 solely for the purpose of improving clarity and grammar, which may suffer in translation, and not for any reason which relates to the statutory requirements for a patent. New claims 8-27 have not been added in response to any rejection, nor in anticipation of any rejection. Applicants respectfully submit that the scope of new claims 8-27 generally corresponds to the scope of original claims 1-7, and that new claims 8-27 are no narrower than original claims 1-7. Furthermore, although a moot point in view of their cancellation, Applicants respectfully submit that original claims 1-7 satisfied the requirements of 35 U.S.C. §112, as filed. New claims 8-27 are supported by the claims as originally filed and in the Specification, for example, at page 1, line 25, through page 2, line 7; at page 3, lines 18-29; and in the Examples. No new matter has been introduced. All of the amendments to the Claims constitute cancellation of original claims and the addition of new claims. Accordingly, pursuant to 37 C.F.R. §1.121(c)(1)(ii), no separate page captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE" is necessary. Entry is therefore proper and respectfully requested.

Preliminary Amendment of U.S. National Stage for International Application PCT/EP99/08105 filed October 27, 1999

Prompt examination of the instant application in view of the amendments made herein is respectfully requested.

Respectfully submitted,

CLAUDIA PANZER, et al.

May 2, 2001
(Date)

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JC18 Rec'd PCT/PTO 0 2 MAY 2001

Ethanolic Cosmetic Preparations Containing Chitosan

Field of the Invention

This invention relates generally to cosmetic preparations and more particularly to formulations which have high ethanol contents and contain special chitosan salts.

Prior Art

Their moisturizing and film-forming properties make chitosans valuable raw materials for the production of cosmetic preparations. Since the chitosans are not water-soluble on their own, they are normally dissolved in a cosmetically acceptable acid, preferably glycolic acid, and marketed in this form. However, the disadvantage of typical commercially obtainable chitosan solutions is that their alcohol compatibility is not high enough so that they are only suitable to a limited extent for the production of sprayable cosmetic preparations of high ethanol content such as, for example, hair sprays or deodorant formulations.

Reference is made in this connection to European patent application **EP 0368253 A2** (Union Carbide) which relates to pharmaceutical preparations for the delayed release of active principles which contain neutralization products of chitosan with various carboxylic acids.

Accordingly, the problem addressed by the present invention was to provide new cosmetic preparations which would contain chitosans in a particularly alcohol-compatible form.

Description of the Invention

The present invention relates to alcohol-based cosmetic preparations containing

(a) 70 to 90% by weight of ethanol and

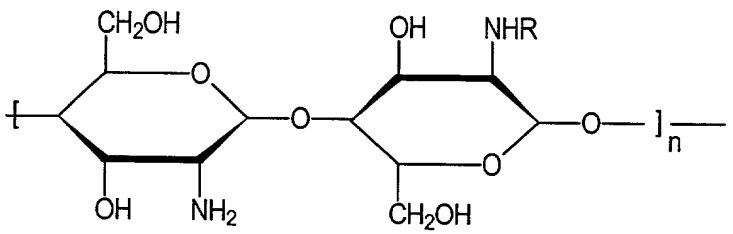
(b) 0.01 to 5% by weight of neutralization products of chitosan with lactic acid, pyrrolidone carboxylic acid, nicotinic acid, hydroxyisobutyric acid, hydroxyisovaleric acid and mixtures thereof

with the proviso that the quantities shown add up to 100% by weight with water and optionally other auxiliaries and additives. If the preparations are sprayed using propellent gases, the ratio by weight of the alcohol-based preparations to the propellent gases may be from 35:65 to 45:55.

It has surprisingly been found that the special chitosan salts are distinguished by greatly improved ethanol compatibility and, accordingly, now allow the production of predominantly alcohol-based formulations such as, for example, hair sprays, hair gels and deodorant formulations. Hair sprays distinguished from known products by a clearly improved setting effect are obtained in this way. So far as hair gels are concerned, the preparations obtained may even be cutting-resistant in terms of consistency, depending on the quantity of chitosans used, so that there is no need to use thickeners. With regard to aerosol formulations, it is possible in accordance with the invention to produce compositions which show relatively high dermatological compatibility and which, in addition, do not stress the hair, but instead counteract dandruff and split ends.

Chitosan salts

Chitosans are biopolymers which belong to the group of hydrocolloids. Chemically, they are partly deacetylated chitins differing in their molecular weights which contain the following – idealized – monomer unit:



In contrast to most hydrocolloids, which are negatively charged at biological pH values, chitosans are cationic biopolymers under these conditions. The positively charged chitosans are capable of interacting with oppositely charged surfaces and are therefore used in cosmetic hair-care and body-care products and pharmaceutical preparations (cf. **Ullmann's Encyclopedia of Industrial Chemistry, 5th Ed., Vol. A6, Weinheim, Verlag Chemie, 1986, pages 231-332**). Overviews of this subject have also been published, for example, by B. Gesslein et al. in **HAPPI 27, 57 (1990)**, O. Skaugrud in **Drug Cosm. Ind. 148, 24 (1991)** and E. Onsoyen et al. in **Seifen-Öle-Fette-Wachse 117, 633 (1991)**. Chitosans are produced from chitin, preferably from the shell residues of crustaceans which are available in large quantities as inexpensive raw materials. In a process described for the first time by Hackmann et al., the chitin is normally first deproteinized by addition of bases, demineralized by addition of mineral acids and, finally, deacetylated by addition of strong bases, the molecular weights being distributed over a broad spectrum. Corresponding processes are known, for example, from **Makromol. Chem. 177, 3589 (1976)** or French patent application **FR 2701266 A1**. Preferred types are those which are disclosed in German patent applications **DE 4442987 A1** and **DE 19537001 A1** (Henkel) and which have an average molecular weight of either 10,000 to 1,000,000 dalton or 100,000 to 5,000,000 dalton, a Brookfield viscosity (1% by weight in glycolic acid) below 5,000 mPas, a degree of deacetylation of 80 to 88% and an ash content of less than 0.3% by weight. The chitosans are used in the form of 1 to 10% by weight and preferably 2 to 5% by weight dilute solutions in lactic acid, pyrrolidone carboxylic acid, nicotinic acid, hydroxyisobutyric acid, hydroxyisovaleric acid and mixtures thereof and are then present as salts, i.e. as lactates, pyrrolidone carboxylates, nicotinates, hydroxybutyrates and/or hydroxyisovalerates.

Commercial Applications

The preparations according to the invention, which are preferably sprayable products, such as hair treatments (especially hair sprays) or deodorant formulations and also gels, may contain mild surfactants, oil components, emulsifiers, superfatting agents, pearlizing waxes, stabilizers, consistency factors, thickeners, cationic polymers, silicone compounds, biogenic agents, antidandruff agents, film formers, preservatives, hydrotropes, solubilizers, UV protection factors, insect repellents, self-tanning agents, propellent gases, perfume oils, dyes and the like.

Typical examples of suitable mild, i.e. particularly dermatologically compatible, **surfactants** are fatty alcohol polyglycol ether sulfates, monoglyceride sulfates, mono- and/or dialkyl sulfosuccinates, fatty acid isethionates, fatty acid sarcosinates, fatty acid taurides, fatty acid glutamates, ether carboxylic acids, alkyl oligoglucosides, fatty acid glucamides, alkyl amidobetaines and/or protein fatty acid condensates (preferably based on wheat proteins).

Suitable **oil components** are, for example, Guerbet alcohols based on fatty alcohols containing 6 to 18 and preferably 8 to 10 carbon atoms, esters of linear C_{6-22} fatty acids with linear C_{6-22} fatty alcohols, esters of branched C_{6-13} carboxylic acids with linear C_{6-22} fatty alcohols, esters of linear C_{6-22} fatty acids with branched alcohols, more particularly 2-ethyl hexanol, esters of linear and/or branched fatty acids with polyhydric alcohols (for example propylene glycol, dimer diol or trimer triol) and/or Guerbet alcohols, triglycerides based on C_{6-10} fatty acids, liquid mono-/di-/triglyceride mixtures based on C_{6-18} fatty acids, esters of C_{6-22} fatty alcohols and/or Guerbet alcohols with aromatic carboxylic acids, more particularly benzoic acid, vegetable oils, branched primary alcohols, substituted cyclohexanes, linear C_{6-22} fatty alcohol carbonates, Guerbet carbonates, esters of benzoic acid with linear and/or branched C_{6-22}

alcohols (for example Finsolv® TN), dialkyl ethers, ring-opening products of epoxidized fatty acid esters with polyols, silicone oils and/or aliphatic or naphthenic hydrocarbons.

Suitable **emulsifiers** are, for example, nonionic surfactants from at least one of the following groups:

(1) products of the addition of 2 to 30 moles of ethylene oxide and/or 0 to 5 moles of propylene oxide onto linear fatty alcohols containing 8 to 22 carbon atoms, onto fatty acids containing 12 to 22 carbon atoms and onto alkylphenols containing 8 to 15 carbon atoms in the alkyl group;

(2) $C_{12/18}$ fatty acid monoesters and diesters of products of the addition of 1 to 30 moles of ethylene oxide onto glycerin;

(3) glycerol monoesters and diesters and sorbitan monoesters and diesters of saturated and unsaturated fatty acids containing 6 to 22 carbon atoms and ethylene oxide adducts thereof;

(4) alkyl mono- and oligoglycosides containing 8 to 22 carbon atoms in the alkyl group and ethoxylated analogs thereof;

(5) addition products of 15 to 60 moles of ethylene oxide onto castor oil and/or hydrogenated castor oil;

(6) polyol esters and, in particular, polyglycerol esters such as, for example, polyglycerol polyricinoleate or polyglycerol poly-12-hydroxy-stearate. Mixtures of compounds from several of these classes are also suitable;

(7) products of the addition of 2 to 15 moles of ethylene oxide onto castor oil and/or hydrogenated castor oil;

(8) partial esters based on linear, branched, unsaturated or saturated $C_{6/22}$ fatty acids, ricinoleic acid and 12-hydroxystearic acid and glycerol, polyglycerol, pentaerythritol, dipentaerythritol, sugar alcohols (for example sorbitol), alkyl glucosides (for example methyl glucoside, butyl glucoside, lauryl glucoside) and polyglucosides (for example

cellulose);

(9) trialkyl phosphates and mono-, di- and/or tri-PEG-alkyl phosphates;

(10) wool wax alcohols;

(11) polysiloxane/polyalkyl polyether copolymers and corresponding derivatives;

(12) mixed esters of pentaerythritol, fatty acids, citric acid and fatty alcohol according to **DE 11 65 574 PS** and/or mixed esters of fatty acids containing 6 to 22 carbon atoms, methyl glucose and polyols, preferably glycerol,

(13) polyalkylene glycols and

(14) glycerol carbonate.

The addition products of ethylene oxide and/or propylene oxide onto fatty alcohols, fatty acids, alkylphenols, glycerol monoesters and diesters and sorbitan monoesters and diesters of fatty acids or onto castor oil are known, commercially available products. They are homolog mixtures of which the average degree of alkoxylation corresponds to the ratio between the quantities of ethylene oxide and/or propylene oxide and substrate with which the addition reaction is carried out. $C_{12/18}$ fatty acid monoesters and diesters of addition products of ethylene oxide onto glycerol are known as refatting agents for cosmetic preparations from **DE 20 24 051 PS**.

$C_{8/18}$ alkyl mono- and oligoglycosides, their production and their use as surfactants are known, for example, from **US 3,839,318, US 3,707,535, US 3,547,828, DE-OS 19 43 689, DE 20 36 472 OS** and **DE 30 01 064 A1** and also from **EP 0 077 167 A1**. They are produced in particular by reaction of glucose or oligosaccharides with primary alcohols containing 8 to 18 C atoms. So far as the glycoside component is concerned, both monoglycosides, in which a cyclic sugar unit is attached to the fatty alcohol by a glycoside linkage, and oligomeric glycosides with a degree of oligomerization of preferably up to about 8 are suitable. The degree of oligomerization is a statistical mean value on which a homolog distribution

typical of such technical products is based.

Zwitterionic surfactants may also be used as emulsifiers. Zwitterionic surfactants are surface-active compounds which contain at least one quaternary ammonium group and at least one carboxylate and one sulfonate group in the molecule. Particularly suitable zwitterionic surfactants are the so-called betaines, such as the N-alkyl-N,N-dimethyl ammonium glycinates, for example cocoalkyl dimethyl ammonium glycinate, N-acylaminopropyl-N,N-dimethyl ammonium glycinates, for example cocoacylaminopropyl dimethyl ammonium glycinate, and 2-alkyl-3-carboxymethyl-3-hydroxyethyl imidazolines containing 8 to 18 carbon atoms in the alkyl or acyl group and cocoacylaminoethyl hydroxyethyl carboxymethyl glycinate. The fatty acid amide derivative known by the CTFA name of *Cocamidopropyl Betaine* is particularly preferred. Other suitable emulsifiers are ampholytic surfactants. Ampholytic surfactants are surface-active compounds which, in addition to a $C_{8/18}$ alkyl or acyl group, contain at least one free amino group and at least one -COOH or -SO_3H group in the molecule and which are capable of forming inner salts. Examples of suitable ampholytic surfactants are N-alkyl glycines, N-alkyl propionic acids, N-alkylaminobutyric acids, N-alkyliminodipropionic acids, N-hydroxyethyl-N-alkylamidopropyl glycines, N-alkyl taurines, N-alkyl sarcosines, 2-alkylaminopropionic acids and alkylaminoacetic acids containing around 8 to 18 carbon atoms in the alkyl group. Particularly preferred ampholytic surfactants are N-cocoalkylaminopropionate, cocoacylaminoethyl aminopropionate and $C_{12/18}$ acyl sarcosine. Besides ampholytic emulsifiers, quaternary emulsifiers may also be used, those of the esterquat type, preferably methyl-quaternized difatty acid triethanolamine ester salts, being particularly preferred.

Superfatting agents may be selected from such substances as, for example, lanolin and lecithin and also polyethoxylated or acylated lanolin and lecithin derivatives, polyol fatty acid esters, monoglycerides and fatty

acid alkanolamides, the fatty acid alkanolamides also serving as foam stabilizers.

Suitable **pearlizing waxes** are, for example, alkylene glycol esters, especially ethylene glycol distearate; fatty acid alkanolamides, especially cocofatty acid diethanolamide; partial glycerides, especially stearic acid monoglyceride; esters of polybasic, optionally hydroxysubstituted carboxylic acids with fatty alcohols containing 6 to 22 carbon atoms, especially long-chain esters of tartaric acid; fatty compounds, such as for example fatty alcohols, fatty ketones, fatty aldehydes, fatty ethers and fatty carbonates which contain in all at least 24 carbon atoms, especially laurone and distearylether; fatty acids, such as stearic acid, hydroxystearic acid or behenic acid, ring opening products of olefin epoxides containing 12 to 22 carbon atoms with fatty alcohols containing 12 to 22 carbon atoms and/or polyols containing 2 to 15 carbon atoms and 2 to 10 hydroxyl groups and mixtures thereof.

The **consistency factors** mainly used are fatty alcohols or hydroxyfatty alcohols containing 12 to 22 and preferably 16 to 18 carbon atoms and also partial glycerides. A combination of these substances with alkyl oligoglucosides and/or fatty acid-N-methyl glucamides of the same chain length and/or polyglycerol poly-12-hydroxystearates is preferably used. Suitable **thickeners** are, for example, polysaccharides, more especially xanthan gum, guar-guar, agar-agar, alginates and tyloses, carboxymethyl cellulose and hydroxyethyl cellulose, also relatively high molecular weight polyethylene glycol monoesters and diesters of fatty acids, polyacrylates (for example Carbopols® [Goodrich] or Synthalens® [Sigma]), polyacrylamides, polyvinyl alcohol and polyvinyl pyrrolidone, surfactants such as, for example, ethoxylated fatty acid glycerides, esters of fatty acids with polyols, for example pentaerythritol or trimethylol propane, narrow-range fatty alcohol ethoxylates or alkyl oligoglucosides and electrolytes, such as sodium chloride and ammonium chloride.

Suitable **cationic polymers** are, for example, cationic cellulose derivatives such as, for example, the quaternized hydroxyethyl cellulose obtainable from Amerchol under the name of Polymer JR 400®, cationic starch, copolymers of diallyl ammonium salts and acrylamides, quaternized vinyl pyrrolidone/vinyl imidazole polymers such as, for example, Luviquat® (BASF), condensation products of polyglycols and amines, quaternized collagen polypeptides such as, for example, Lauryldimonium Hydroxypropyl Hydrolyzed Collagen (Lamequat® L, Grünau), quaternized wheat polypeptides, polyethyleneimine, cationic silicone polymers such as, for example, amodimethicone, copolymers of adipic acid and dimethylamino-hydroxypropyl diethylenetriamine (Cartaretine®, Sandoz), copolymers of acrylic acid with dimethyl diallyl ammonium chloride (Merquat® 550, Chemviron), polyaminopolyamides as described, for example, in **FR 2 252 840 A1** and crosslinked water-soluble polymers thereof, cationic chitin derivatives such as, for example, quaternized chitosan, optionally in micro-crystalline distribution, condensation products of dihaloalkyls, for example dibromobutane, with bis-dialkylamines, for example bis-dimethylamino-1,3-propane, cationic guar gum such as, for example, Jaguar®CBS, Jaguar®C-17, Jaguar®C-16 of Celanese, quaternized ammonium salt polymers such as, for example, Mirapol® A-15, Mirapol® AD-1, Mirapol® AZ-1 of Miranol.

Suitable **silicone compounds** are, for example, dimethyl polysiloxanes, methylphenyl polysiloxanes, cyclic silicones and amino-, fatty acid-, alcohol-, polyether-, epoxy-, fluorine-, glycoside- and/or alkyl-modified silicone compounds which may be both liquid and resin-like at room temperature. Typical examples of **fats** are glycerides while suitable **waxes** are inter alia beeswax, carnauba wax, candelilla wax, montan wax, paraffin wax or microwaxes, optionally in combination with hydrophilic waxes, for example cetyl stearyl alcohol or partial glycerides. Metal salts of fatty acids such as, for example, magnesium, aluminium and/or zinc stearate may be

used as **stabilizers**. In the context of the invention, **biogenic agents** are, for example, tocopherol, tocopherol acetate, tocopherol palmitate, ascorbic acid, retinol, bisabolol, allantoin, phytantriol, panthenol, AHA acids, amino acids, ceramides, pseudoceramides, essential oils, plant extracts and vitamin complexes. Suitable **antidandruff agents** are climbazol, octopirox and zinc pyrithione. Standard **film formers** are, for example, quaternized chitosan, polyvinyl pyrrolidone, vinyl pyrrolidone/vinyl acetate copolymers, polymers of the acrylic acid series, quaternary cellulose derivatives, collagen, hyaluronic acid and salts thereof and similar compounds. Suitable **swelling agents** for aqueous phases are montmorillonites, clay minerals, Pemulen and alkyl-modified Carbopol types (Goodrich).

In the context of the invention, **UV protection filters** are organic compounds which are capable of absorbing ultraviolet rays and of releasing the energy absorbed in the form of longer wave radiation, for example heat. Typical examples are 4-aminobenzoic acid and esters and derivatives thereof (for example 2-ethylhexyl-p-dimethylaminobenzoate or p-dimethylaminobenzoic acid octyl ester), methoxycinnamic acid and derivatives thereof (for example 4-methoxycinnamic acid-2-ethylhexyl ester), benzophenones (for example oxybenzone, 2-hydroxy-4-methoxybenzophenone), dibenzoyl methanes, salicylate esters, 2-phenylbenzimidazole-5-sulfonic acid, 1-(4-tert.butylphenyl)-3-(4'-methoxyphenyl)-propane-1,3-dione, 3-(4'-methyl)-benzylidenebornan-2-one, methyl-benzylidene camphor and the like. Other suitable UV filters are finely disperse metal oxides and salts, for example titanium dioxide, zinc oxide, iron oxide, aluminium oxide, cerium oxide, zirconium oxide, silicates (talcum) and barium sulfate. The particles should have an average diameter of less than 100 nm, preferably from 5 to 50 nm and more preferably from 15 to 30 nm. They may be spherical in shape although ellipsoidal particles or other non-spherical particles may also be used. Besides the two above-mentioned groups of primary light filters,

secondary light filters of the antioxidant type, which interrupt the photochemical reaction chain initiated when UV radiation penetrates into the skin, may also be used. Typical examples of these secondary light filters are Superoxid-Dismutase, tocopherols (vitamin E) and ascorbic acid (vitamin C).

In addition, **hydrotropes**, such as, for example, ethanol, isopropyl alcohol or polyols may be used to improve flow behavior. Suitable polyols preferably contain 2 to 15 carbon atoms and at least two hydroxyl groups. Typical examples are

- glycerol;
- alkylene glycols such as, for example, ethylene glycol, diethylene glycol, propylene glycol, butylene glycol, hexylene glycol and polyethylene glycols having an average molecular weight of 100 to 1,000 dalton;
- technical oligoglycerol mixtures with a degree of self-condensation of 1.5 to 10 such as, for example, technical diglycerol mixtures with a diglycerol content of 40 to 50% by weight;
- methylol compounds such as, in particular, trimethylol ethane, trimethylol propane, trimethylol butane, pentaerythritol and dipentaerythritol;
- lower alkyl glucosides, particularly those containing 1 to 8 carbon atoms in the alkyl group, for example methyl and butyl glucoside;
- sugar alcohols containing 5 to 12 carbon atoms such as, for example, sorbitol or mannitol;
- sugars containing 5 to 12 carbon atoms such as, for example, glucose or sucrose and
- aminosugars such as, for example, glucamine.

Suitable **preservatives** are, for example, phenoxyethanol, formaldehyde solution, parabens, pentanediol or sorbic acid. Suitable **insect repellents** are N,N-diethyl-m-toluamide, pentane-1,2-diol or Insect

Repellent 3535. A suitable **self-tanning agent** is dihydroxyacetone. Suitable **propellent gases** are dimethylether and aliphatic hydrocarbons and mixtures thereof.

Suitable **perfume oils** include the extracts of blossoms (lavender, rose, jasmine, neroli), stems and leaves (geranium, patchouli, petitgrain), fruits (anise, coriander, caraway, juniper), fruit peel (bergamot, lemon, orange), roots (nutmeg, angelica, celery, cardamon, costus, iris, calmus), woods (sandalwood, guaiac wood, cedarwood, rosewood), herbs and grasses (tarragon, lemon grass, sage, thyme), needles and branches (spruce, fir, pine, dwarf pine), resins and balsams (galbanum, elemi, benzoin, myrrh, olibanum, opoponax). Animal raw materials, for example civet and beaver, may also be used. Suitable synthetic or semisynthetic perfume oils are Ambroxan, eugenol, isoeugenol, citronellal, hydroxy-citronellal, geraniol, citronellol, geranyl acetate, citral, ionone and methyl ionone.

Suitable **dyes** are any of the substances suitable and approved for cosmetic purposes as listed, for example, in the publication **"Kosmetische Färbemittel"** of the **Farbstoffkommission der Deutschen Forschungsgemeinschaft, Verlag Chemie, Weinheim, 1984, pages 81 to 106,** These dyes are normally used in concentrations of 0.001 to 0.1% by weight, based on the mixture as a whole.

The total percentage content of auxiliaries and additives may be from 1 to 50% by weight and is preferably from 5 to 40% by weight, based on the particular formulation. The formulations may be prepared by standard cold or hot processes and are preferably produced by the phase inversion temperature method.

Examples

The preparations according to the invention have many advantages by virtue of their high ethanol content and the presence of the ethanol-

compatible chitosan salts. For example, investigations of keratin fibers have shown that an aqueous preparation containing 0.2% by weight of chitosan glycolate achieves a flexural strength of 50% while the same preparation containing 0.2% by weight of chitosan hydroxyisovalerate and 90% by weight ethanol achieves 110% setting. For comparison: if the chitosan hydroxyisovalerate is replaced by a known film former of the vinyl pyrrolidone/vinyl acetate copolymer type, only 60% setting is achieved. The ethanol compatibility of various chitosan salts is shown in the following Table:

Table 1.

Ethanol compatibility of chitosan salts

Chitosan salt	**Ethanol compatibility**
Chitosan aspartate	50
Chitosan glutamate	55
Chitosan azelate	60
Chitosan glycolate	65
Chitosan pyrrolidone carboxylate	70
Chitosan lactate	80
Chitosan nicotinate	80
Chitosan hydroxyisobutyrate	95
Chitosan hydroxyisovalerate	95

CLAIMS

1. Alcohol-based cosmetic preparations containing

(a) 70 to 90% by weight of ethanol and

(b) 0.01 to 5% by weight of neutralization products of chitosan with lactic acid, pyrrolidone carboxylic acid, nicotinic acid, hydroxyisobutyric acid, hydroxyisovaleric acid and mixtures thereof,

with the proviso that the quantities shown add up to 100% by weight with water and optionally other auxiliaries and additives.

2. Preparations as claimed in claim 1, characterized in that they contain chitosans with an average molecular weight of 10,000 to 1,000,000.

3. Preparations as claimed in claim 1, characterized in that they contain chitosans with an average molecular weight of 1,000,000 to 5,000,000.

4. Preparations as claimed in at least one of claims 1 to 3, characterized in that they are hair treatment compositions.

5. Preparations as claimed in claim 4, characterized in that they are hair sprays.

6. Preparations as claimed in claim 4, characterized in that they are hair gels.

7. Preparations as claimed in at least one of claims 1 to 3, characterized in that they are deodorant formulations.

#3

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DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION

☐ Declaration Submitted with Initial Filing OR ☒ Declaration Submitted after Initial Filing

Attorney Docket Number	H 3630 PCT/US
First Named Inventor	PANZER, Claudia
COMPLETE IF KNOWN	
Application Number	09/830,918
Filing Date	08/13/2001
Group Art Unit	
Examiner Name	

As a below named inventor, I hereby declare that:
My residence, post office address, and citizenship are as stated below next to my name.
I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

ETHANOLIC COSMETIC PREPARATIONS CONTAINING CHITOSAN

(Title of the Invention)

the specification of which
☐ is attached hereto
OR
☒ was filed on (MM/DD/YYYY) 10/27/1999 as United States Application Number or PCT International Application Number PCT/EP99/08105 and was amended on (MM/DD/YYYY) _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY	Priority Not Claimed	Certified Copy Attached? YES	NO
198 50 734.8	DE	11/04/1998	☐	☐	☒

☐ Additional foreign application numbers are listed on a supplemental priority sheet attached hereto:

I hereby claim the benefit under Title 35, United States Code §119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	
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DECLARATION

Page 2

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code §112.1 acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number *(if applicable)*
	PCT/EP99/08105	10/27/1999	

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority sheet attached hereto.

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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☒ Additional inventors are being named on supplemental sheet(s) attached hereto

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DECLARATION

ADDITIONAL INVENTOR(S) Supplemental Sheet

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2-00

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Inventor's Signature					Date		
Residence: City		State		Country		Citizenship	
Post Office Address							
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